

REMARKS

This application has been amended in a manner that is believed to place it in condition for allowance at the time of the next Official Action.

Claims 1-16 are pending in the present application. Claims 1-15 have been amended to address the formal matters raised in the outstanding Official Action. New claim 16 has been added. Support for new claim 16 may be found in original claim 1.

In the outstanding Official Action, claim 1 was objected to for reciting the term "agro-food products". However, claim 1 has been amended so that this term is no longer recited.

Claim 13 was objected to for reciting the phrase "it has". However, claim 13 has been amended so that the phrase is no longer recited.

As a result, applicants respectfully request that the objections be withdrawn.

Claims 1-15 were rejected under 35 USC §112, second paragraph, for allegedly being indefinite. This rejection is respectfully traversed.

Claims 1-15 have been amended so that they no longer recite a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation. Thus, the claims have been amended to reflect United States patent practice. Applicants do not disclaim any of the subject

matter recited within the ranges that have been removed from the claims.

Claims 10-12 were rejected for reciting "the use" of a pyrolysis reactor. However, claims 10-12 have been amended so they recite a process. Accordingly, applicants respectfully request that the rejection be withdrawn.

Claim 1 was rejected for reciting the phrase "comprises essentially the steps consisting in". Claim 1 has been amended so this phrase is no longer recited.

Thus, applicants respectfully request that the rejection be withdrawn.

Claims 1-9 and 13-15 were rejected under 35 USC §103(a) as allegedly being unpatentable over UNDERWOOD et al. in view of WEISSMAN and WISTREICH et al. This rejection is respectfully traversed.

UNDERWOOD et al. teaches an aqueous wood smoke solution for flavoring woodstuffs. The wood smoke solution is produced by quickly heating an oxygen-starved atmosphere ground wood or cellulose to between 400°C and 650°C within a second. The wood or cellulose and the primary pyrolysis vapors are maintained at 400°C and 650°C for several additional seconds. Finally, the temperature of the pyrolysis products is reduced very quickly. The wood smoke solution product can then be separated and collected.

WEISMANN teaches a method for producing smoke which does utilize a screw configuration. However, the material proceeding through the screw configuration is heated by external electrical heater bars.

WISTREICH et al. is directed to a method producing liquid smoke by treating an aqueous medium, wherein the smoke is extracted by condensation or absorption in the aqueous medium followed by concentration of the resulting solution to increase the smoke content. The smoke is generated in a normal manner by partial combustion of hard wood but, instead of exposing the food product to the smoke particles and vapors, the smoke is taken up by the aqueous medium for subsequent use.

Applicants believe that none of the publications disclose or suggest a screw configuration wherein the screw is heated by itself when current passes through the screw. In the present invention, the screw is heated by itself when the current passes through it, i.e., the screw is a means heating means (resistor).

Neither UNDERWOOD et al. nor WISTREICH et al. disclose or suggest the recited screw. UNDERWOOD et al. teaches a fast pyrolysis step that quickly transfers heat from hot particulates to an organic material (col. 8, lines 1-10). WISTREICH et al. heat wood material by placing them on a plate/conveyor belt system for advancement and then heat the bottom side of the plate/conveyor belt system directly.

In WEISSMAN, the screw 25 of Figure 3 is heated by external electrical heater bars H. As a result, the heating is not uniform because the distance varies between the bars H and the heated substances placed on the screw 25. Thus, the state of the matter to be pyrolyzed "oscillates" between a state where it is not heated enough (when it is very remote from the heating bars H) and a state where it might be overheated (when it is very close to the heating bars H).

In the heated screw of the present invention, which is normally fully loaded with matter to be pyrolyzed, the surface between the lower portion of the trough 20 heated by the H bars in WEISSMAN covers (according to Figure 4) approximately less than 90° of the U-shaped side walls 21, 22 and the surface of the matter resting on them before these substances are moved by the rotation of the screw 25. Accordingly, applicants submit that WEISSMAN would actually lead one skilled in the art away from the claimed invention.

Thus, none of the publications disclose a process as claimed where the matter to be pyrolyzed is heated thanks to a (electrically) heated screw which enables a very precise control of the temperature. In view of the above, applicants submit that one skilled in the art would not be motivated to combine and modify the cited publications to obtain the claimed invention.

Furthermore, as the formation of HAP (especially benzoanthracene) is dependent on the temperature, smoke obtained

with a "flash-pyrolysis" process involving temperatures above 400°C and up to 650°C will contain more harmful substances as the claimed "slow-pyrolysis" process at relatively low temperatures (where peaks of temperature are also avoided thanks to the homogenous heating).

UNDERWOOD et al. teach a "fast" pyrolysis process in which the matter to be pyrolyzed is heated at a very high temperature (400°C-650°C) very quickly (a few seconds) and then cooled very quickly (see abstract). Thus, it is believed that the teachings of UNDERWOOD et al would actually lead one skilled in the art away from the claimed invention.

In view of the above, applicants believe that the proposed combination fails to disclose or suggest the claimed invention.

Claims 1-15 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1 and 3-16 of copending Application No. 10/612,972 in view of WEISSMAN. This rejection is respectfully traversed.

As acknowledged by the Patent Office, there are distinct differences between claims 1 and 3-16 of copending Application No. 10/612,972 and the claims of the present invention. However, the Official Action cites to WEISSMAN as showing that these differences are obvious. As noted above, applicants respectfully submit that WEISSMAN would lead one

skilled in the art away from the claimed invention. As a result, it cannot be said that the proposed combination of WEISSMAN in view of the claims of Application No. 10/612,972 would lead to the claimed invention.

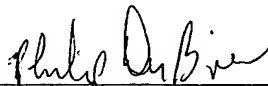
As a result, applicants respectfully request that the double patenting rejection be withdrawn.

In view of the present amendment and the foregoing remarks, therefore, applicants believe that the present application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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